

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method for determining critical dimension variation, comprising:

providing a wafer having a grating structure comprising a plurality of lines;
illuminating at least a portion of the lines with a light source;
measuring light reflected from the illuminated portion of the lines to generate a reflection profile; and
determining a critical dimension variation measurement along a length of the lines based on the reflection profile.

2. (Original) The method of claim 1, wherein determining the critical dimension variation measurement further comprises:

comparing the generated reflection profile to a library of reference reflection profiles, each reference reflection profile having an associated critical dimension variation metric;
selecting a reference reflection profile closest to the generated reflection profile; and
determining the critical dimension variation measurement based on the critical dimension variation metric associated with the selected reference reflection profile.

3. (Original) The method of claim 1, further comprising determining at least one parameter of an operating recipe of a polishing tool adapted to polish a subsequent wafer based on the reflection profile.

4. (Original) The method of claim 3, wherein determining at least one parameter of the operating recipe of the polishing tool comprises changing at least one of a polish time, a downforce parameter, and a polishing pad speed parameter.

5. (Original) The method of claim 3, wherein determining the at least one parameter of the operating recipe further comprises determining the at least one parameter of the operating recipe for a polishing process to be performed on a shallow trench isolation region of the subsequent wafer.

6. (Original) The method of claim 1, wherein generating the reflection profile comprises generating the reflection profile based on at least one of intensity and phase of the reflected light.

7. (Original) The method of claim 1, wherein providing the wafer comprises providing the wafer having the grating structure formed in a test structure on the wafer.

8. (Original) The method of claim 1, wherein providing the wafer comprises providing the wafer having the grating structure formed in a production device on the wafer.

9. (Original) The method of claim 1, wherein determining the critical dimension variation measurement further comprises:

comparing the generated reflection profile to a target reflection profile; and

determining the critical dimension variation measurement based on the comparison of the generated reflection profile and the target reflection profile.

10. (Currently Amended) The method of claim 1, further comprising identifying a fault condition associated with the lines based on the critical dimension variation measurement reflection profile.

11. (Previously Presented) A method for determining critical dimension variation, comprising:

- providing a wafer having a grating structure comprising a plurality of lines;
- illuminating at least a portion of the lines with a light source;
- measuring light reflected from the illuminated portion of the lines to generate a reflection profile; and
- comparing the generated reflection profile to a library of reference reflection profiles, each reference reflection profile having an associated critical dimension variation metric;
- selecting a reference reflection profile closest to the generated reflection profile; and
- determining a critical dimension variation measurement along a length of the lines based on the critical dimension variation metric associated with the selected reference reflection profile.

12. (Original) The method of claim 11, further comprising determining at least one parameter of an operating recipe of a polishing tool adapted to polish a subsequent wafer based on the reflection profile.

13. (Original) The method of claim 12, wherein determining at least one parameter of the operating recipe of the polishing tool comprises changing at least one of a polish time, a downforce parameter, and a polishing pad speed parameter.

14. (Original) The method of claim 12, wherein determining the at least one parameter of the operating recipe further comprises determining the at least one parameter of the operating recipe for a polishing process to be performed on a shallow trench isolation region of the subsequent wafer.

15. (Original) The method of claim 11, wherein generating the reflection profile comprises generating the reflection profile based on at least one of intensity and phase of the reflected light.

16. (Original) The method of claim 11, wherein providing the wafer comprises providing the wafer having the grating structure formed in a test structure on the wafer.

17. (Original) The method of claim 11, wherein providing the wafer comprises providing the wafer having the grating structure formed in a production device on the wafer.

18. (Currently Amended) The method of claim 11, further comprising identifying a fault condition associated with the lines based on the critical dimension variation measurement reflection profile.

19. (Previously Presented) A method for determining critical dimension variation, comprising:

providing a wafer having a grating structure comprising a plurality of lines;

illuminating at least a portion of the lines with a light source;

measuring light reflected from the illuminated portion of the lines to generate a reflection profile; and

comparing the generated reflection profile to a target reflection profile; and

determining a critical dimension variation measurement along a length of the lines based on the comparison of the generated reflection profile and the target reflection profile.

20. (Original) The method of claim 19, further comprising determining at least one parameter of an operating recipe of a polishing tool adapted to polish a subsequent wafer based on the reflection profile.

21. (Previously Presented) The method of claim [[19]] 20, wherein determining at least one parameter of the operating recipe of the polishing tool comprises changing at least one of a polish time, a downforce parameter, and a polishing pad speed parameter.

22. (Previously Presented) The method of claim [[19]] 20, wherein determining the at least one parameter of the operating recipe further comprises determining the at least one parameter of the operating recipe for a polishing process to be performed on a shallow trench isolation region of the subsequent wafer.

23. (Original) The method of claim 19, wherein generating the reflection profile comprises generating the reflection profile based on at least one of intensity and phase of the reflected light.

24. (Original) The method of claim 19, wherein providing the wafer comprises providing the wafer having the grating structure formed in a test structure on the wafer.

25. (Original) The method of claim 19, wherein providing the wafer comprises providing the wafer having the grating structure formed in a production device on the wafer.

26. (Currently Amended) The method of claim 19, further comprising identifying a fault condition associated with the lines based on the critical dimension variation measurement reflection profile.

27-47. (Canceled)